

TTCN-3 CONFORMANCE TEST SUITE STF 433 STATUS REPORT

Requirements tracking
case study

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Requirements tracking case study

- ISP RAS contributed to the project requirements management tool **Requality**
 - Hierarchical grouping of requirements
 - Requirements elicitation from DOC/HTML documents
 - Requirements are connected to certain locations in the documents
 - Requirements locations are highlighted
 - Requirements refinement through test purposes
 - Test purposes define specific cases to be tested in order to treat corresponding requirement 'covered'
 - Requirements coverage by test cases report
 - Source document change management (beta)
 - Update requirements when the text of the standard is modified
- Requality is an open-source plugin to eclipse
- Integrated with version control software (SVN)

Sample view: Requality in TTWorkbench

TTCN-3 Development - Document - TTworkbench Professional

File Edit Navigate Search Project Refactoring Run Window Help

TTCN-3 Projects

Sem_2302_timer_start_001.ttcn es_20187301v040301p.xhtml

23.2 The Start timer operation

The `start` timer operation is used to indicate that a timer shall start running.

Syntactical Structure

```
(( TimerIdentifier | TimerParIdentifier ) { "[" SingleExpression "]" } )  
"." start [ "(" TimerValue ")" ]
```

Semantic Description

When a timer is started, its name is added to the list of running timers (for the given scope unit).

The optional timer value parameter shall be used if no default duration is given, or if it is desired to override the default value specified in the timer declaration. When a timer duration is overridden, the new value applies only to the current instance of the timer, any later `start` operations for this timer, which do not specify a duration, shall use the default duration.

Starting a timer with the timer value 0.0 means that the timer times out immediately. Starting a timer with a negative timer value, e.g. the timer value is the result of an expression, or without a specified timer value shall cause a runtime error.

The timer clock runs from the float value zero (0.0) up to maximum stated by the duration parameter.

The `start` operation may be applied to a running timer, in which case the timer is stopped and re-started. Any entry in a timeout-list for this timer shall be removed from the timeout-list.

Restrictions

In addition to the general static rules of TTCN-3 given in clause 5, the following restrictions apply:

- Timer value shall be a non-negative numerical float number (i.e. the value shall be greater or equal 0.0, infinity

Problems Console Graph Module Deps TTCN-3 Declaration @ T3Doc Progress Properties

TTworkbench Development Console

```
01:03:44:425: [ERROR]: java compiler failed  
01:03:44:442: [ERROR]: compilation finished with errors, found no modules to process  
01:12:49:502: [ERROR]: NegSem_2302_timer_timeout_004_errr15: unexpected token: (
```

1 items selected

Requality Explorer

- requirements [standards/4.3.1/requirements]
 - Documents
 - es_20187301v040301p.xhtml
 - Reports
 - Requirements
 - 12 Declaring timers
 - 13 Declaring messages
 - 23 Timer operations
 - Usage of timers is allowed in test cases, functions,
 - Positive syntax test
 - Timer read is not allowed in component definition
 - Timer running is not allowed in component definition
 - Timer stop is not allowed in module definition
 - Timer timeout operation is not allowed in module definition
 - 23.2 The start timer operation
 - Start timer syntax
 - Overridden timer value applies only to current instance
 - neg timer value causes error verdict
 - timer can be restarted by repeated start operation
 - timer clock runs from 0 to the value set
 - timer value is non-neg float
 - Timer with the timer value 0.0 times out immediately
 - 23.3 The Stop timer operation
 - 23.4 The Read timer operation
 - 23.5 The Running timer operation
 - 23.6 The Timeout operation
 - Timer Timeout syntax
 - The any keyword used with the timeout operation
 - The timeout shall not be used in a boolean expression
 - Timeout operational semantics
 - The timeout can be used as alternative in alternative
 - The timeout can be used as a standalone state

Case study in a nutshell

- Requirements elicitation
 - 4 chapters: 12 Declaring messages, 13 Declaring timers, 23 Timer operations, 24 Verdict operations; total 7,5 pages
 - 56 requirements elicited, 7 requirements refined into 34 test purposes; covered by 174 test cases
 - Average 7,5 requirements per page, 3 test cases per requirement
- Requirements tracking implemented via requirements references in test cases
 - Special comment in TTCN3 sources:
// #reqname /Requirements/23 Timer operations/23.2 The start timer operation/Timer with the timer value 0.0 times out immediately.
 - Nikolay Pakulin (ISPRAS) implemented report generator to track requirements coverage

Suggested use case (ISPRAS)

- Add requirements markup to TTCN3 standard
 - Manual
- Introduce references between requirements and TTCN3 test cases
 - Manual
- Track requirements changes between TTCN3 standard revisions
 - Automated (beta)
- Track required changes in TTCN3 ATS
 - Manual, to be automated

